

# Lab Assignment



Cybersecurity Professional Program  
Introduction to Python  
for Security

## Functions

**PY-05-L6**

**Recursive Search**

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## Lab Objective

Understand how recursion works and how it can be used in Python.

## Lab Mission

Implement the concept of recursion to print values from a nested list.

## Lab Duration

15–25 minutes

## Requirements

- Basic knowledge of Python
- Working knowledge of functions and lists

## Resources

- Environment & Tools
  - Windows, Linux, or macOS
    - PyCharm
    - Python 3

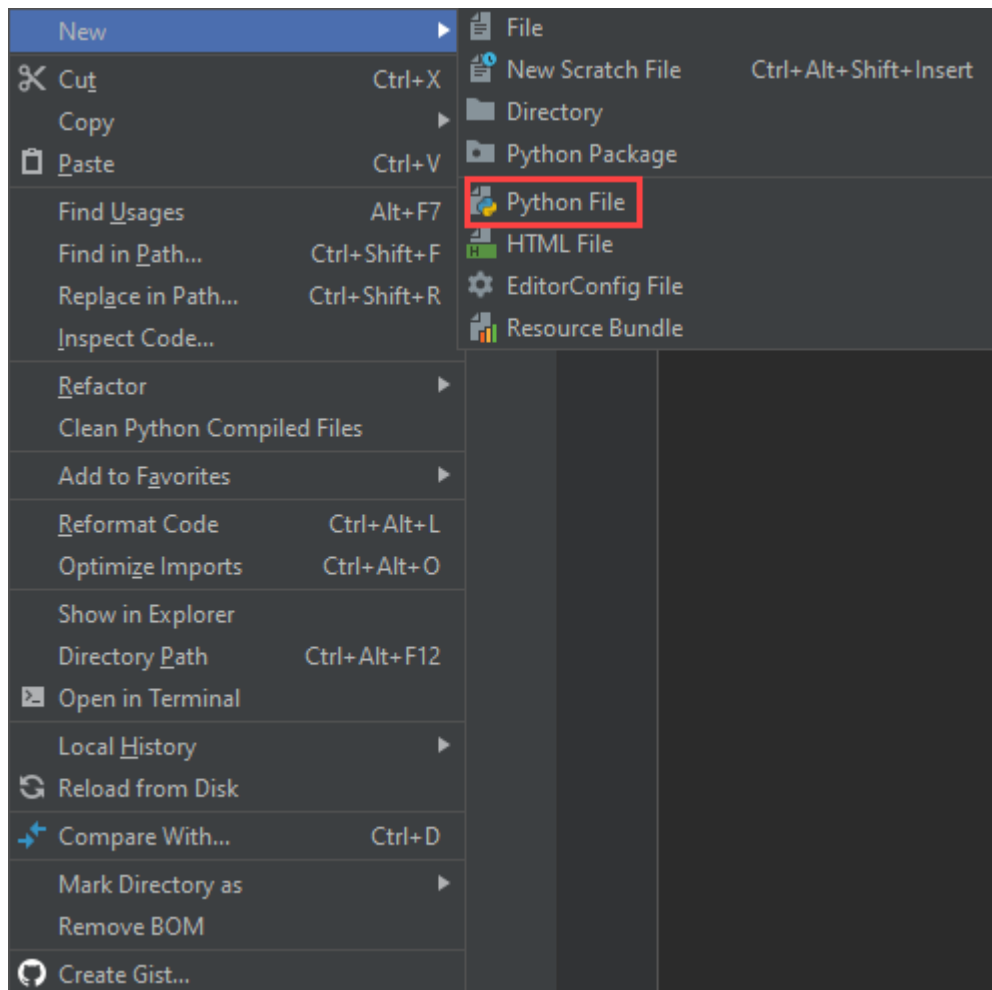
## Textbook References

- Chapter 5: Functions
  - Section 3: Recursion

## Lab Task: Implementing a Recursive Search

Write a program that identifies items in a list of integers and other data types and prints only numbers within nested lists.

- 1 Create a new Python file in PyCharm by right-clicking the project you created and selecting **New > Python File**.



- 2 Create a variable to store the following list:  
`[1, 2, "a", [4, 5, "b", 6], [7, [8, "d", 9]]]`

```
lst = [1, 2, "a", [4, 5, "b", 6], [7, [8, "d", 9]]]
```

- 3 Create a new function that accepts a parameter.

```
def print_numbers(item_list):
```

- 4 Create a **for** loop to iterate over the accepted parameter.

```
def print_numbers(item_list):  
    for item in item_list:
```

- 5 In the loop, check if the iterated item is an integer and print it if it is.

```
def print_numbers(item_list):  
    for item in item_list:  
        if type(item) == int:  
            print(item)
```

- 6 Continue the condition and check if the item is on a list. If it is, invoke the function again with the item as the provided parameter.

```
def print_numbers(item_list):  
    for item in item_list:  
        if type(item) == int:  
            print(item)  
        elif type(item) == list:  
            print_numbers(item)
```

- 7 Invoke the function to run the program.

```
print_numbers(lst)
```